

TABLE 4.—*Severe local storms, January 1940—Continued*

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Iowa <sup>1</sup> .....	13			4		Snow.....	All highways in the State dangerous; motorists told to drive only when necessary; cars stalled in deep drifts; visibility poor.
Kansas City, Mo. <sup>1</sup> .....	13					Glaze.....	Traffic delayed because of slippery roads and streets.
Wisconsin.....	13-14				\$9,000	Snow and wind.....	This moderately severe storm that swept over all sections of the State, except the northwest, was preceded by some glaze and sleet with damage to wires and poles. More than 10 inches of snow fell in the section from Lafayette County northeastward to Green Bay. High winds caused much drifting.
Monroe County, Ala., central portion.....	14	3 a. m. ....	880	3	5,000	Tornado.....	Twelve persons injured; property damaged.
Mount Meigs, Ala.....	14	5 a. m. ....	100	4	15,000	do.....	Ten persons injured; property damaged.
Buffalo, N. Y., southwest of.....	14					Gales and light snow.....	Property damaged; motor traffic difficult.
Syracuse, N. Y., south of.....	14					Sleet and snow.....	Motor traffic delayed.
Montpelier-Burlington, Vt. <sup>1</sup> .....	14					Blizzard.....	This reported to be the worst storm in 13 years. Between 200 to 300 motorists stalled on either side of Bolton Flats on the Montpelier-Burlington road. The road was closed by motor-vehicle inspectors after midnight. Some motorists turned back on either side of the storm center to Burlington and Montpelier or Waterbury, while scores of others abandoned their cars and sought refuge in nearby farmhouses.
Bakersfield, Vt. <sup>1</sup> .....	15				1,000	do.....	Mill blown over; roof of barn blown off and carried about 50 feet landing on another barn which was blown down. Motorists marooned, unable to drive because of poor visibility; much wire trouble as trees fell.
Texas, Panhandle section <sup>1</sup> .....	18					do.....	Snow with temperature at 4° in Amarillo, Plainview, and Borger.
Watertown, N. Y., and southward.....	19-22					Snow.....	In some places snow piled up in deep drifts. Country roads completely blocked and main roads kept open with difficulty. Isolated sections snowbound for a week or more.
New York, western portion.....	21					Wind and snow.....	High winds drifted roads badly, some being completely blocked to automobile traffic.
Louisiana.....	22					Snow, sleet, and freezing rain.....	Seven to 8 inches of snow recorded in the west-central portion with greater amounts eastward, St. Joseph having 11.3 inches. Considerable sleet and freezing rain in all sections, except in the extreme southeast.
Georgia.....	23					Snow.....	This storm, severe for this section, left a cover of 4 inches or more southward to La Grange and beyond Griffin, Greensboro, and Washington. From Atlanta and Tallapoosa northward most stations reported 10 inches or more. Schools closed in many places.
South Carolina.....	23					do.....	Heaviest snow in 4 years. Traffic considerably hampered by frozen snow on many streets and highways.
Nashville, Chattanooga, and Knoxville, Tenn., and vicinity.....	23				100,000	Snow and ice.....	Heaviest snowfall recorded in 11 years with below freezing temperature turning snow and slush into crusty ice on streets and sidewalks. In Nashville the ground was frozen to a depth of 18 inches. Roads in many sections impassable; traffic hazardous; schools closed. Several persons died from exposure and accidents; others received less serious injury; many young animals perished.
Virginia.....	23-24			12	500,000	Heavy snow.....	Cost of removing snow; \$300,000; \$200,000 damage to pavements; 4 persons frozen to death and 8 persons died because of fires caused by overheated homes.
Washington, D. C., and vicinity.....	23-24					Snow.....	Traffic almost at standstill; schools closed; persons hours late for office; 60 snow plows used to scrape the city's main traffic arteries. Snowfall of 9.5 inches recorded.
Atlantic City, N. J.....	24					do.....	Schools closed for the day; civic and charitable affairs scheduled for evening postponed. Busses delayed, motoring difficult; 2 barge watchmen rescued by coast guards. Nine inches of snow recorded.

<sup>1</sup> From press reports.

## DESCRIPTION OF CHARTS

By R. J. MARTIN

Beginning this month the description of charts has been moved to a point immediately preceding the charts. A new chart, No. XIII, giving mean tropopause data for the month, appears in the REVIEW beginning with this issue. The descriptions of the Aerological Charts (VIII through XIII) were furnished by B. Francis Dashiell of the Aerological Division.

Chart I.—*Temperature departures and wind roses for selected stations.*—Based on data contained in table 2, this chart presents the departures of the monthly mean surface temperatures from the monthly normals. The shaded portions of the chart indicate areas of positive departures and unshaded portions indicate areas of negative departures. Generalized lines connect places having approximately equal departures of like sign. Charts of monthly surface temperature departures in the United States were first published in the MONTHLY WEATHER REVIEW for July 1909, and continued thereafter, but smaller charts appear in W. B. *Bulletin U* for 1873 to June 1909, inclusive. An innovation has been made in this chart, beginning January 1939. The selected wind rose data formerly published as chart VII have been transferred to this chart. The wind roses are based on hourly percentages by months for 28 selected Weather Bureau stations.

Chart II.—*Tracks of centers of ANTICYCLONES; and*

Chart III.—*Tracks of centers of CYCLONES.* The roman numerals show the chronological order of the cen-

ters. The figures within the circles show the days of the month, the location indicated being that at 7:30 a. m., 75th meridian time. Within each circle is also an entry of the last three figures of the highest barometric reading (chart II) or the lowest reading (chart III) reported at or near the center at that time, in both cases as reduced to sea level and standard gravity. The intermediate 7:30 p. m. locations are indicated by dots. The inset map on chart II shows the departure of monthly mean pressure from normal and the inset on chart III shows the change in mean pressure from the preceding month.

The use of a new base map for charts II and III began with the January 1930 issue. Charts IV, V, and VI are based on data found in table 2.

Chart IV.—*Percentage of clear sky between sunrise and sunset.*—The average cloudiness at each regular Weather Bureau station is determined by numerous personal observations between sunrise and sunset. The difference between the observed cloudiness and 100 is assumed to represent the percentage of clear sky, and the values thus obtained are the basis of this chart. The chart does not relate to the night hours.

Chart V.—*Total precipitation.*—The scales of shading with appropriate lines show the distribution of the monthly precipitation according to reports from both regular and cooperative observers. The inset on this chart shows the departure of the monthly totals from the corresponding normals, as indicated by the reports from the regular stations.

Chart VI.—*Isobars at sea level and isotherms at surface, prevailing winds.*—The pressures have been reduced to sea level and standard gravity by the method described by Prof. Frank H. Bigelow in the REVIEW for January 1902, 30: 13–16. The pressures have also been reduced to the mean of the 24 hours by the application of a suitable correction to the mean of 7:30 a. m. and 7:30 p. m. readings at stations taking two observations daily, and to the 7:30 a. m. or the 7:30 p. m. observation at stations taking but a single observation.

The diurnal corrections so applied, except for stations established since 1901, will be found in the Annual Report of the Chief of the Weather Bureau, 1900–1901, volume 2, table 27, pages 140–164.

The sea-level temperatures are now omitted and average surface temperatures substituted. The isotherms cannot be drawn in such detail as might be desired, for data from only the regular Weather Bureau stations are used.

The prevailing wind directions are determined from hourly observations at almost all the stations. A few stations determine their prevailing directions from the daily or twice-daily observations only.

Chart VII.—*Total snowfall.*—This is based on the reports from regular and cooperative observers and shows the depth in inches of the snowfall during the month. In general, the depth is shown by lines connecting places of equal snowfall, but in special cases figures also are given. This chart is published only when the snowfall is sufficiently extensive to justify its preparation. The inset on this chart, when included, shows the depth of snow on the ground at 7:30 p. m. of the Monday nearest the end of the month and is a copy of the snow chart appearing in the Snow and Ice Bulletin for that week. Generally, the publication of the Weekly Snow and Ice Bulletin commences about the middle of December and continues to near the close of March.

Charts VIII, IX, X, and XI show the monthly mean barometric pressures in millibars, mean temperatures in degrees Centigrade, and resultant-wind directions and forces in Beaufort Scale, for 1.5, 3, 5, and 10 kilometers, respectively. However, the mean pressures given on chart VIII are reduced from 1.5 kilometers to an altitude of 5,000 feet (1,524 meters).

The mean pressures and temperatures, based on observations obtained by radiosondes and airplanes, are shown on charts VIII, IX, and X, for 1.5, 3, and 5 kilometers, respectively, while those based on radiosondes only are given on chart XI for 10 kilometers. All Weather Bureau radiosonde observations are made at 1 a. m., 75th meridian time.

Resultant-wind directions and forces for the month, as shown on charts VIII and IX for 1.5 and 3 kilometers, respectively, are based on observations taken at 5 a. m., 75th meridian time, but the winds given on charts X and XI (5 and 10 kilometers, respectively), are based on the 5 p. m., 75th meridian time, observations, which, as a rule, reach much higher altitudes.

Chart XII represents a mean isentropic chart which has been developed in accordance with methods used by the Division of Research and Education of the U. S. Weather Bureau. This has been described in detail in the January 1939 issue of the MONTHLY WEATHER REVIEW. It is based on the mean free-air data from radiosonde, airplane, and pilot-balloon stations.

Beginning January 1940 the mean monthly altitudes (in kilometers) of the tropopause for each radiosonde station, as well as the weighted mean temperatures in degrees Centigrade will be shown on chart XIII. This new chart is prepared from data contained in Aerological table 4, published elsewhere in this REVIEW.

Charts XIV, XV, etc.—*North Atlantic weather maps for particular days.*

